Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Lockheed Martin Corporation Request for	)	Docket No. _____
Waiver of Sections 5.5 and 5.84 of the	)	
Commission's Rules	)	

LOCKHEED MARTIN CORPORATION REQUEST FOR WAIVER

Mike Walsh
Chief Engineer, Radar and Sensor Systems (RSS) Rotary & Mission Systems

Jennifer A. Warren
Vice President, Technology Policy & Regulation

Scott A. Kotler
Director, Technical Regulatory Affairs

LOCKHEED MARTIN CORPORATION
2121 Crystal Drive #100
Arlington, VA 22202

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TABLE OF CONTENTS

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LOCKHEED MARTIN CORPORATION REQUEST FOR WAIVER

Lockheed Martin Corporation ("Lockheed Martin") requests a limited, expedited waiver of Sections 5.5 and 5.84 of the Commission's rules,[1] which govern the harmful interference and non-interference criteria of the Experimental Radio Service, at Lockheed Martin's Research, Test, Development & Evaluation ("RDT&E") radar facilities in Cazenovia, NY and Liverpool, NY.[2] A waiver will enable Lockheed Martin to continue its RDT&E operations in support of the United States' and its allies' S-band (3.1-3.55 GHz) radar and national security needs without harming rapid 5G deployment in the 3.45-3.55 GHz segment of the S-band ("3.45 GHz segment"). Since the essential benefits of Lockheed Martin's radar operations outweigh strict application of the Commission's rules at these two limited sites, good cause exists to grant a waiver.[3]

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[1] 47 C.F.R. §§ 5.5, 5.84. To the extent that a waiver of the Table of Frequency Allocations is required as well, Lockheed Martin seeks a waiver of Section 2.106 of the Commission's rules.

[2] *See infra* Exhibit A. The sites, both within the Syracuse, NY PEA, are located at these coordinates: Liverpool – 43° 6' 48.25" N 76° 11' 12.08" W; Cazenovia – 42° 55' 35.91" N 75° 55' 26.65" W. Lockheed Martin's other high power radar testing site in Moorestown, NJ, is completely encompassed within the Moorestown Cooperative Planning Area ("CPA") and can be accommodated through the CPA process; this waiver only concerns the Liverpool and Cazenovia sites, which are outside of any CPA.

[3] *See* 47 C.F.R. § 1.3 ("The provisions of this chapter may be . . . waived for good cause shown . . . .").

Lockheed Martin emphasizes that this waiver seeks to create a dependable and predictable coexistence framework for Lockheed Martin and a small set of potentially affected 3.45 GHz Service licensees. Lockheed Martin strongly supports achieving U.S. leadership in 5G, the rapid deployment of new spectrum for 5G, and a successful, high-grossing Auction 110. In that regard, Lockheed Martin and bidders in Auction 110 will benefit from greater certainty on the regulatory status of Lockheed Martin's Liverpool and Cazenovia sites, which are encompassed within a single contour because of the proximity of the two sites.

Without a dedicated radio service or allocation, the Experimental Radio Service has sufficed for Lockheed Martin for decades because the only significant incumbents are federal operators served by their defense industrial supply chain. But as the Commission recently noted in another context, "experimental rules are not intended to cover long-term commercial enterprises,"[4] and the S-band radar manufacturers have found themselves in that situation. Following the Commission's recent repurposing of the 3.45 GHz segment, Lockheed Martin, as an essential part of the defense industrial supply chain, will face great uncertainty over its NY facilities' continued access, as new commercial wireless licensees with primary status enter the band. While it "will continue to be able to obtain experimental licenses for such testing," the Commission's Part 5 rules "limit experimental use to operations on a non-interference basis and generally require licensees to notify or coordinate with incumbent spectrum users to avoid causing harmful interference."[5] The new commercial licensees will have no coordination

[4] *Allocation of Spectrum for Non-Federal Space Launch Operations et al.*, Report and Order and Further Notice of Proposed Rulemaking, ET Docket No. 13-115 and RM-11341, FCC 21-44 ¶ 19 (rel. Apr. 22, 2021).

[5] *Facilitating Shared Use in the 3100-3550 MHz Band*, Second Report and Order, Order on Reconsideration, and Order of Proposed Modification, WT Docket No. 19-348, FCC 21-32 ¶ 34 (rel. Mar. 18, 2021) ("*Second 3.45 GHz R&O*").

obligations towards existing non-federal experimental licensees and only a vague expectation to "cooperate with Part 5 licensees when presented with requests for experimentation and testing."[6]

This waiver request proposes accommodations that reflect significant operational changes to Lockheed Martin's ongoing S-band operations, as detailed below, including restricting testing to limited off-peak hours and a reduced portion of the band. These proposed concessions result from Lockheed Martin's diligent internal assessment of how it could alter its RDT&E operations at its Liverpool and Cazenovia sites to accommodate new mobile entrants—while taking into account its workforce and its contractual obligations. The proposed accommodations result from balancing these ongoing operational needs against the projected needs of 5G operators.

Expedited grant of this waiver would function, at a minimum, as a stopgap while Lockheed Martin pursues a long-term solution to continue its critical operations in the 3.45 GHz segment on behalf of its customers. The requested waiver and proposed conditions are not intended to be immutable but to function as part of a long-term coordination solution that maximizes the use of the 3.45 GHz segment for both national security missions and its U.S. supply chain as well as 5G needs. Lockheed Martin looks forward to continuing to work collaboratively with Commission staff and stakeholders to address any concerns and finalize an effective coordination framework.

I. BACKGROUND

A. Research, Development, Testing & Evaluation of S-Band Radars at Lockheed Martin's Liverpool and Cazenovia Sites Is Vital to Maintaining the U.S. National Security Supply Chain.

Lockheed Martin's state-of-the-art manufacturing facilities at Cazenovia and Liverpool develop and produce S-band radars that enable critical air, surface, and missile defense missions;

[6] *Id.*

space domain awareness; and counter-fire target acquisition missions for use by both the Department of Defense and U.S. allies abroad. Lockheed Martin has long provided critical technology to enable a wide range of applications in the S-band, and radar applications continue to be in high demand in the United States and worldwide. To this end, Lockheed Martin has relied extensively on the Experimental Radio Service, which has been invaluable to innovation in multiple sectors of the U.S. manufacturing economy, including the defense sector and state-of-the-art radar manufacturing in particular.

The direct economic impact of Lockheed Martin's RDT&E operations is substantial. Lockheed Martin mainly conducts its experimental outdoor RDT&E operations at three sites: Moorestown, NJ, Cazenovia, NY, and Liverpool, NY. Lockheed Martin has invested tens of millions of dollars in its large-scale, outdoor RDT&E infrastructure. And its operations at the Cazenovia and Liverpool sites alone support 2,000 highly skilled jobs and contribute to the overall U.S. aerospace & defense industry's position as a net exporter of products from the United States.

B. Without an Adequate Coordination Framework in Place, Lockheed Martin's Critical RDT&E Operations Are at Risk of Being Pushed out of the 3.1-3.55 GHz Band.

Lockheed Martin's RDT&E operations require access to the full 3.1-3.55 GHz band because radars cannot be reliably tested in one band and then operated in another, and federal operators are expected to "remain indefinitely in the band."[7]

Radiofrequency devices often vary in performance across a frequency band. While testing below 3.45 GHz would verify a radar system's performance in that part of the band, such testing could not verify that the system also meets its required performance in the 3.45 GHz

[7] *Id.* ¶ 135.

segment. A full assessment of performance across the required operating frequency range, including any impairments and band-edge effects, would not be possible. Without full-band access, system calibration across the required operating band would not be possible before deployment—which is both inefficient and challenging. Also, validation of system performance in modes requiring the use of wideband waveforms (e.g., classification, discrimination, identification ("CDI") functions) would not be possible. The inability to calibrate and validate arrays properly over the entire range, including wideband modes, would impact key radar parameters such as equivalent isotropically radiated power ("EIRP"), antenna characteristics (e.g., sidelobe levels), and measurement qualities (e.g., angle accuracy).

Lockheed Martin and the U.S. military and allies significantly invested in the S-band because the band supports the long-range, large field-of-view search, track, and CDI functions of radar. The reasons for its suitability are (1) large, contiguous portions of bandwidth, (2) the appropriate measurement qualities can be met with a system that fits on a resource-constrained mobile ground or ship platform, (3) an efficient EIRP is possible, (4) absorption by the atmosphere is low, and (5) attenuation by rain is low. Only mid-band spectrum below 6 GHz provides this complement of essential characteristics at an acceptable cost, size, weight, and power draw.

Limiting RDT&E operations to indoor testing or the use of different sites are not viable alternatives. Customer sites are often ill-equipped for RDT&E operations because they cannot "support the breadth and intensity of testing that takes place at contractor facilities required for engineering development, systems integration, and sustainment problem resolution."[8] Also,

[8] Comments of the Aerospace Industries Association, WT Docket No. 19-348, at 4 (filed Nov. 20, 2020) ("AIA Comments").

Lockheed Martin already maximizes the use of anechoic chambers for testing. While these indoor chambers can help characterize a small subset of antenna hardware under ideal conditions, radars must be able to meet users' mission requirements. As a result, RDT&E operations must be done in the presence of moving targets at significant distances to validate the effects of an operationally relevant environment (e.g., inclement weather and surface reflections) on radar performance (detection, measurement qualities, and interference rejection). Moreover, testing in indoor anechoic chambers does not permit full-power testing of most radar systems. Without such testing, a contractor cannot verify that a system meets the required transmit EIRP. Restricting radars to indoor testing would also preclude assessing these systems' detection performance against live and calibrated test targets in real-world environments—a necessity for U.S. and allies' national security needs. Without such testing, it would not be possible to ensure a system meets its required detection, false alarm, tracking, and interference rejection (e.g., clutter and electromagnetic interference) requirements.

C. The *Second 3.45 GHz R&O* Left Lockheed Martin's RDT&E Infrastructure and Operations in an Untenable Regulatory Posture That Should Be Addressed Before the Auction 110 Short-Form Filing Window Opens.

The *First 3.45 GHz R&O* recognized the importance of Lockheed Martin's and other defense and aerospace contractors' experimental operations, urging "future users of the band to negotiate in good faith . . . consistent with the regulatory status afforded primary users versus experimental licenses."[9] The *First 3.45 GHz R&O* did not define what constitutes "good faith" negotiations in this context, unlike other proceedings,[10] and instead noted "that Office of

[9] *Facilitating Shared Use in the 3100-3550 MHz Band*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 11078 ¶ 21 (2020) ("*First 3.45 GHz R&O*").

[10] *See, e.g.*, 47 C.F.R. § 101.73(b) ("In evaluating claims that a party has not negotiated in good faith, the FCC will consider, *inter alia*, the following factors . . . .").

Engineering and Technology staff have historically worked to mediate disputes between parties and will continue to do so in the future."[11]

Lockheed Martin and others explained that this solution was untenable and recommended several solutions to address those concerns.[12] The Commission ultimately decided not to adopt these proposals, although the *Second 3.45 GHz R&O* reiterated that the Commission "expect[ed] all future commercial licensees to cooperate with part 5 licensees when presented with requests for experimentation and testing in the 3.45 GHz [segment]" and clarified that the Commission "may revisit it as necessary based on the experience of experimental and 3.45 GHz Service licensees."[13]

Lockheed Martin strongly supports the Commission's carefully considering these issues and intends to participate in good faith in whatever framework the Commission provides. But a vague "expectat[ion]" that licensees "cooperate"—along with the lack of mutual or aligned incentives between the new entrants and the incumbent RTD&E and federal operators—is unlikely to lead to a mutually agreeable outcome, let alone a solution prior to the auction to provide greater transparency and certainty to the auction process.[14] And by the time the

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[11] *First 3.45 GHz R&O* ¶ 21.

[12] *See generally* Comments of Lockheed Martin, WT Docket No. 19-348 (filed Nov. 20, 2020); Reply Comments of Lockheed Martin, WT Docket No. 19-348 (filed Dec. 7, 2020); AIA Comments; Reply Comments of the Aerospace Industries Association, WT Docket No. 19-348 (filed Dec. 7, 2020).

[13] *Second 3.45 GHz R&O* ¶ 34. In this regard, Lockheed Martin appreciates Commissioner Starks' attention to these ongoing negotiations. *Id.*, Statement of Commissioner Geoffrey Starks at 111 ("I will be observing those negotiations closely, as well as the cooperation efforts between commercial licensees and the Department of Defense contractors who currently operate in this band under part 5 experimental licenses.").

[14] Notably, the Commission removed "good faith" from its expectation of future licensees' negotiations with experimental operators. *Compare First 3.45 GHz R&O* ¶ 21 ("We expect future users of the band *to negotiate in good faith* with applicants for experimental authorizations, consistent with the regulatory status afforded primary users versus experimental

Commission can "revisit" the issue (i.e., after 3.45 GHz licenses are auctioned and assigned), investment-backed expectations will make it harder for the Commission to change course.

As a result, the best time for the Commission to revisit these issues is well before Auction 110, which is slated to begin in "early October 2021."[15] The short-form application window is likely to open by July, and the prohibited communications rules will go into effect shortly thereafter—lasting until the Auction 110 down payment deadline (i.e., late 2021 or early 2022).[16] Expedited action on this waiver request, at least on a preliminary basis, would provide potential auction applicants time to account for any potential changes before the short-form filing window for Auction 110 opens. Whatever actions are taken before Auction 110, the Commission can preserve flexibility down the line by providing notice to potential applicants of any outstanding petitions (including this one), applications, and other requests that may affect 3.45 GHz authorizations.

II. A LIMITED WAIVER OF SECTIONS 5.5 AND 5.84 WOULD SERVE THE PUBLIC INTEREST BY PRESERVING A CRITICAL NATIONAL SECURITY SUPPLY CHAIN AND U.S. TECHNOLOGICAL LEADERSHIP IN THE NATIONAL SECURITY SPACE.

The Commission may grant requests for a waiver under Section 1.3 of its rules if the petitioner demonstrates good cause.[17] Good cause exists "where particular facts would make

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licenses under our rules.") (emphasis added) *with Second 3.45 GHz R&O* ¶ 145 ("As the Commission stated in the [*First 3.45 GHz R&O*], we expect future licensees *to negotiate* with experimental authorization applicants, consistent with the regulatory status afforded primary users versus experimental licenses under our rules.") (citing *First 3.45 GHz R&O* ¶ 21) (emphasis added).

[15] *See Auction of Flexible-Use Service Licenses in the 3.45–3.55 GHz Band for Next-Generation Wireless Services Comment Sought On Competitive Bidding Procedures for Auction 110*, Public Notice, AU Docket No. 21-62, FCC 21-33 ¶ 1 (rel. Mar. 18, 2021).

[16] 47 C.F.R. § 1.2105(c).

[17] *See* 47 C.F.R. § 1.3; *see also* 47 C.F.R. § 1.925(b)(3)(i) ("The Commission may grant a request for waiver if it is shown that: [t]he underlying purpose of the rule(s) would not be served

strict compliance inconsistent with the public interest."[18] "To make this public interest determination, the waiver cannot undermine the purpose of the rule, and there must be a stronger public interest benefit in granting the waiver than in applying the rule."[19]

Lockheed Martin seeks a waiver of Sections 5.5 and 5.84 of the Commission's rules[20] with the right to protection from harmful interference from other operators in the 3.45-3.55 GHz segment of the S-band.[21] As shown below, good cause exists to grant a waiver because strict application of the above-listed rules would conflict with, and in fact undermine, the public interest. A grant would serve the public interest by ensuring Lockheed Martin retains sufficient access to the spectrum to serve critical U.S. national security needs for today and the innovations needed by our customers for tomorrow's challenges.

A. Waiver Will Serve the Public Interest by Ensuring Continued Access to Spectrum Critical for Radar Research, Development, Testing & Evaluation.

Lockheed Martin's Cazenovia and Liverpool RDT&E operations are permanent (rather than *ad hoc*) in nature, heavily utilizing the 3.1-3.55 GHz band on a nearly constant basis. Lockheed Martin has relied on a temporary Experimental Radio Service authorization, with no other suitable licensing framework available for private sector nongovernment entities operating on a primary Federal spectrum allocation, on behalf of and for the Department of Defense's

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or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest.").

[18] *ICO Global Communications (Holdings) Ltd. v. FCC*, 428 F.3d 264, 269 (D.C. Cir. 2005) (citing *Ne. Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) ("*Ne. Cellular*")).

[19] *Kyma Medical Technologies Ltd. Request for Waiver of Part 15 of the Commission's Rules Applicable to Ultra-Wideband Devices*, Order, 31 FCC Rcd 9705 ¶ 5 (2016) (citing *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969)).

[20] 47 C.F.R. §§ 5.5, 5.84.

[21] To the extent that a waiver of the Table of Frequency Allocations is required as well, Lockheed Martin seeks a waiver of Section 2.106 of the Commission's rules.

benefit. This make-do approach has sufficed for many years, but the 3.45 GHz proceeding reflects the overall insufficiency of an experimental authorization for Lockheed Martin's radar test infrastructure and test operations at Cazenovia and Liverpool.

The public interest supports a reasonable accommodation for these two sites, which will ensure that the U.S. military and its allies (constituting significant U.S. export value) that rely on S-band radars will not have their supply chain significantly disrupted due to the loss of reliable access to the 3.45 GHz segment. It will also ensure no disruption in the U.S. leadership and global competitiveness in advanced S-band radar technologies.

By contrast, without the requested waiver, Lockheed Martin (and thus its customers) may lose reliable access to the spectrum needed to perform the RDT&E operations critical to meeting DoD and U.S. allies' defense needs. The Aerospace Industry Association summarized the potential detriments that would result:

> Use of less than the full range that the radars will employ in the field will compromise a complete assessment of how electronic components, antenna elements, and other sensitive devices react in response to exposure to radiofrequency signals in the specific frequency range, precluding, for example, a full assessment of any impairments and band edge effects. In addition, if the full band were not available during manufacture and integration testing (which is very frequently a contractual requirement), some testing would need to be deferred until after installation at each customer's site, which would be unnecessarily inefficient and burdensome: each installed site would require duplicative test equipment, land and ancillary facilities and systems to support the test equipment, and additional personnel and travel expenses. These factors would introduce significant cost and schedule increases, and adversely impact U.S. manufacturers' competitiveness abroad.[22]

[22] Letter of Edward A. Yorkgitis, Jr., Counsel, Raytheon Technologies Corporation, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 19-348, at 2 (filed Sept. 24, 2020).

Indeed, it is unclear how an *ad hoc* coordination framework would allow the fulfillment of existing contractual obligations. And compared to the very modest accommodation required by this waiver request, avoiding these impairments is clearly in the public interest.

B. The Purpose of Sections 5.5 and 5.84 Would Not Be Undermined by a Limited Waiver Allowing Lockheed Martin Infrastructure to Continue Operating in the 3.45 GHz Segment.

Sections 5.5 and 5.84 work in tandem to generally prohibit experimental licensees from causing harmful interference to other authorized operators. Section 5.5 defines "harmful interference" as "[a]ny radiation or induction that . . . obstructs or repeatedly interrupts a radio service operating in accordance with the Table of Frequency Allocations . . . ."[23] Section 5.84, in turn, requires experimental licensees to cease operating if they cause harmful interference to other authorized operators.[24]

Lockheed Martin requests that the Commission waive the definition of "harmful interference" as applied to (1) Lockheed Martin's RDT&E operations at its Cazenovia and Liverpool sites and (2) other authorized operations in the 3.45 GHz segment[25] located within the contour described in Exhibit A (3) during limited "off-peak" times defined below. In addition, or in the alternative, the Commission should determine that Lockheed Martin's obligation to cease operating does not apply when conditions (1)-(3) apply.[26]

The waiver of these rules would not undermine their purpose. The Commission has made clear that a "basic tenet of [the] experimental licensing program is that an experiment may

[23] 47 C.F.R. § 5.5.

[24] 47 C.F.R. § 5.84.

[25] If the Commission introduces flexible-use operations below the 3.45 GHz segment, this limitation would need to be modified.

[26] *See* 47 C.F.R. § 5.84.

not cause harmful interference."[27] But that does not mean that there are no unique circumstances where the Commission may need to accommodate experimental licensees. Indeed, this is such a case; and the multiple Commission directions to future 3.45 GHz licensees "to negotiate in good faith,"[28] "to negotiate,"[29] and "to cooperate" would so indicate and are presumably made with a legal basis. Nor would the Office of Engineering and Technology be able to "mediate disputes" if one party always possessed unilateral authority to push the other out of the band.[30]

This waiver request is an extension of that very same principle. By granting a limited waiver, the Commission will provide much more clarity on the regulatory status of Lockheed Martin's existing RDT&E infrastructure and operations vis-à-vis 3.45 GHz licensees. Also, it would give all stakeholders far greater certainty about their operational constraints and how to coordinate any requests for adjustments. And finally, if a dispute were to arise, it would also give the Office of Engineering and Technology a basis by which to mediate that dispute.

Moreover, the elevation of Lockheed Martin's operating rights would be consistent with several Commission waiver decisions elevating existing operators' rights. For example, as part of the PCS/*Emerging Technologies* transition, Fixed Service microwave licensees typically were subjected to secondary status if they filed a major modification.[31] Marathon County Sherriff's

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[27] *Promoting Expanded Opportunities for Radio Experimentation and Market Trials under Part 5 of the Commission's Rules and Streamlining Other Related Rules, 2006 Biennial Review of Telecommunications Regulations – Part 2 Administered by the Office of Engineering and Technology (OET)*, Report and Order, 28 FCC Rcd 758, n.150 (2013) (citing 47 C.F.R. § 5.84).

[28] *First 3.45 GHz R&O* ¶ 21 ("We expect future users of the band to negotiate in good faith with applicants for experimental authorizations . . . .").

[29] *Second 3.45 R&O* ¶ 145, n.362 ("[W]e expect future licensees to negotiate with experimental authorization applicants . . . .").

[30] *Id.* ("[The] Office of Engineering and Technology staff have historically worked to mediate disputes between parties and will continue to do so in the future.").

[31] 47 C.F.R. § 101.81.

Department filed a waiver seeking to retain primary status while also pursuing a major modification of its microwave system.[32] The Commission concluded that the public interest benefits of the system would be lost if its status were subordinated to mobile entrants.[33] In granting the waiver, the Commission emphasized as "decisionally significant" that the changes in operating conditions were "a direct result of [a decision made by an entity other than Marathon] to tear down its existing water tower, a decision that is outside of the control of Marathon."[34] Indeed, the Commission granted similar waiver requests where applicants' potential loss of spectrum usage rights was beyond their control.[35] By contrast, the Commission rejected requests from similarly situated petitioners where it concluded that the loss of the spectrum rights was the result of the licensee's failure to act.[36] As another example, the Commission granted the City of Lewisburg a waiver to operate a Part 90 wireless wastewater management system on a primary, rather than secondary, basis, requiring it "to cooperate with

[32] *Marathon County Sheriff's Department Request for Waiver of Section 101.81 of the Federal Communications Commission Rules*, Order, 19 FCC Rcd 3911 (2004).

[33] *Id.* ¶ 9 ("Secondary licensees must not cause interference to primary licensees and must accept interference. Consequently, there is a concern that Marathon's public safety and emergency services communications in a large part of the County would be vulnerable to interference. . . . [W]e are persuaded that imposition of secondary status on communications of this nature would pose a risk of serious adverse consequences to the public.").

[34] *Id.*

[35] *Tucson Electric Power Company*, Order, 15 FCC Rcd 19118 ¶ 9 (2000) ("We note further that Tucson's move and associate[d] changes are a result of its accommodation of the Forest Service's request that it move, rather than actions for its own business purposes."); *see also Turlock Irrigation District*, Order on Reconsideration, 14 FCC Rcd 15540 ¶ 8 (1999).

[36] *Plumas-Sierra Rural Electric Cooperative for Fixed Microwave Service Stations and Request for Waiver of Section 101.81 of the Federal Communications Commission Rules*, Order, 15 FCC Rcd 5572 ¶ 9 (2000) ("We do not believe that an inadvertent failure to renew a license in a timely manner is so unique or unusual to warrant a waiver of the rules.").

any affected present or future co-channel licensees to minimize and reduce interference."[37] The Commission granted a similar waiver request for the Milwaukee Metropolitan Sewerage District ("MMSD"), noting "that MMSD is requesting primary status to allow it to work with other licensees to resolve any interference issues, rather than being forced to shut down immediately at some point in the future if interference problems with any existing or new licensee develop."[38]

Taken together, these decisions show that the Commission is willing to confer both primary transmit rights and primary interference protection rights (1) where the public interest supports continued operations, (2) on a case-by-case basis, and (3) where the incumbent operator's displacement was the result of circumstances beyond its control. These conditions are present here.

When Lockheed Martin raised similar precedent in the rulemaking context,[39] the *Second 3.45 GHz R&O* distinguished those decisions because they did not involve experimental operators.[40] Waiver grants, however, are premised on *unique* circumstances, and so waivers and their circumstances should not be expected to be similar to one another. Indeed, "[w]aiver is appropriate if '*special circumstances* warrant a deviation from the Commission's rule, and such deviation will serve the public interest.'"[41] Special circumstances are present here, and thus this

[37] *City of Lewisburg Request for Waivers of Part 90 Rules to Permit Implementation of Wireless Water Management System*, Order, 26 FCC Rcd 10706 ¶ 7 (2011).

[38] *Milwaukee Metropolitan Sewerage District Request for Waiver to Allow Fixed Operations on a Primary Basis in the 450-470 MHz Band*, Order, 19 FCC Rcd 2623 ¶ 7 (2004).

[39] Letter from Michele Farquhar, Counsel, Lockheed Martin, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 19-348 (filed Mar. 11, 2021) ("March 11, 2021 Lockheed Martin Letter").

[40] *Second 3.45 GHz R&O* at n.115.

[41] *Improving 911 Reliability, Reliability and Continuity of Communications Networks, Including Broadband Technologies*, Order, 35 FCC Rcd 8084 (2020) (quoting *Ne. Cellular*, 897 F.2d at 1166) (emphasis added).

is precisely the type of situation where the Commission has often used its waiver authority.[42] As NTIA recently noted, "[i]t is critical that [Lockheed Martin's (and other radar manufacturers')] facilities retain access to the spectrum for this testing and experimentation so federal agencies' contracting requirements will be fulfilled."[43] Moreover, because of the unique facts associated with Lockheed Martin's Cazenovia and Liverpool sites (i.e., longstanding, economically beneficial operations in support of critical national security priorities), the grant of this waiver should be of limited precedential value.[44]

C. Targeted Waiver Conditions Will Maximize Flexibility between 3.45 GHz Licensees' and Lockheed Martin's Longstanding Infrastructure and Operations.

Lockheed Martin proposes several waiver conditions, reflecting significant effort to balance and accommodate the needs of entering 3.45 GHz commercial licensees and Lockheed Martin. In particular, these proposed conditions would limit Lockheed Martin's in-band operations above 3.45 GHz to (1) off-peak hours, (2) the smallest feasible geographic coverage area, and (3) using a more limited portion of the 3.45 GHz segment. Lockheed Martin is also

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[42] *Combined Technologies, Inc. Request for Waiver of Section 90.179 of the Commission's Rules*, Order, 14 FCC Rcd 1964 (1998) ("Given the nature of CTI's proposal and the temporary timeframe of the proposed sharing plan, we conclude that CTI has demonstrated that its request presents unique circumstances."); *Requests for Waiver by Grants/Cibola County School District Grants, New Mexico et al.*, Order, 33 FCC Rcd 10048 ¶ 2 (2018) ("We find that the unique circumstances in these matters warrant a waiver."); *Review of the Emergency Alert System NTELOS Petition for Limited Waiver*, Order, 24 FCC Rcd 2875 ¶ 2 (2009) ("We conclude that a waiver should be granted . . . because NTELOS has demonstrated unique and unusual factual circumstances warranting relief . . . .").

[43] Letter from Charles Cooper, Associate Administrator, NTIA, to Ronald T. Repasi, Acting Chief, Office of Engineering and Technology, and Joel Taubenblatt Acting Chief, Wireless Telecommunications Bureau, WT Docket No. 19-348, at 6 (filed Feb. 19, 2021).

[44] The Commission rejected a proposal for a broader coordination requirement. *Second 3.45 GHz R&O* at n.115. For the avoidance of doubt, Lockheed Martin clarifies that it does not intend to use this waiver request as a vehicle to collaterally attack that decision.

seeking this waiver as immediate relief with plans to explore a Part 90 authorization with the Commission, which, if granted, would further limit the scope and potential duration of any waiver. Taken together, these conditions will ensure that grant of the requested waiver is not an either-or choice between national defense interests and rapid deployment of 5G spectrum.

1. Limited Operations During Peak Hours

Lockheed Martin's near-constant RDT&E operations at its Cazenovia and Liverpool sites are very often conducted in three shifts. Only certain phases of RDT&E operations, however, require Lockheed Martin radars to transmit throughout the S-band. At other times, reduced-bandwidth operations can be sufficient (i.e., in-band operations between 3.1-3.45 GHz) for certain aspects of RDT&E operations. Within the constraints of its contractual deadlines for the delivery of fully tested radars, Lockheed Martin has flexibility in choosing when it conducts testing across the full S-band. By contrast, peak mobile broadband network usage typically occurs in the early evening.[45]

Lockheed Martin proposes that the waiver be conditioned on its operations in the 3.45 GHz segment being limited to a fixed amount of time each day during the off-peak hours (e.g., the third shift between midnight and 8 AM) when wireless operators are least likely to need the added capacity in the 3.45 GHz segment. Other times during the day would be limited to operations up to 3.45 GHz.

[45] Ryan Heuser, *The Data Says: Mobile Traffic by Day and Time*, seoClarity (Apr. 16, 2015), https://www.seoclarity.net/blog/mobile-seo-by-day-and-time-11890/.

2. Limited Operating Contour

Lockheed Martin proposes to limit its in-band operations in the 3.45-3.55 GHz segment of the S-band to the contour and coordinates provided in Exhibit A.[46] In the 3.45 GHz rulemaking proceeding, Lockheed Martin submitted a joint operating contour for the Cazenovia and Liverpool sites.[47] This waiver request relies on this same contour. As discussed above, Lockheed Martin proposes to limit its 3.45 GHz RDT&E operations to off-peak network usage hours, and therefore this contour only applies during off-peak hours.

Lockheed Martin would also support further revision of the contour based on coordination and collaboration with the eventual 3.45 GHz licensees in PEAs 41, 44, and 227. Depending on base station siting and real-world testing, additional collaboration could enable a more refined contour.

3. Limited Use of the 3.45 GHz Segment

Lockheed Martin proposes to limit its RDT&E testing to the bottom 75 megahertz of the 3.45 GHz segment (inclusive of a guard band), which would avoid any encumbrance to the top 3.45 GHz Service license blocks. This concession will enable potential licensees with a strong interest in full usage of PEAs 41, 44, and 227 to acquire unencumbered licenses in this band. During off-peak hours, commercial licensees' 3.45 GHz base stations within the Exhibit A contour could avoid using the 3.45-3.525 GHz (the lower 75 megahertz) segment or, following discussion, might steer their beams away from Lockheed Martin's Cazenovia and Liverpool sites and/or operate at lower transmit power.

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[46] Exhibit A provides an overlay of the contour on top of Partial Economic Area ("PEA") boundaries. Only portions of PEAs 41, 44, and 227 are potentially affected by this waiver request.

[47] *See* March 11, 2021 Lockheed Martin Letter.

4. Part 90 Application Approach

Along with this waiver petition, Lockheed Martin indicates it is considering filing a Part 90 Radiolocation Service application to establish a permanent solution for Lockheed Martin's continued need to operate its two sites outside of CPAs and Periodic Use Areas in the 3.1-3.525 GHz segment.[48] The requested Part 5 waiver in that case would be a temporary measure while the Commission evaluates the Part 90 application. As Lockheed Martin mentioned in April 2020, the Commission could ensure continuing RDT&E operations "by retaining a limited non-federal radiolocation allocation that would be on an equal regulatory status with 5G mobile."[49] But rather than seeking a sweeping Radiolocation Service accommodation, grant of a Part 90 application would provide a narrowly tailored solution solely for the individual Cazenovia and Liverpool sites.

Lockheed Martin envisions pursuing a Part 90 authorization that would provide full operating rights to Lockheed Martin at its Cazenovia and Liverpool sites. Lockheed Martin has been testing radars in the area since the 1950s and invested several million dollars in upgrading each facility's outdoor testing infrastructure over the last 20 years. Grant of that application would, of course, serve the public interest by creating a permanent solution for the Cazenovia and Liverpool sites' functions, protecting and advancing the vital national security and economic interests they support. Lockheed Martin's RDT&E operations at these two sites alone support more than 2,000 highly skilled jobs. As discussed above, RDT&E operations at these sites support the production of radar systems for air, surface, and missile defense missions; space

[48] Lockheed Martin continues to explore other regulatory alternatives to support mutually agreeable coexistence of ongoing RDT&E and 5G operations.

[49] Letter from Jennifer A. Warren, Vice President, Technology Policy & Regulation, Lockheed Martin, and Scott A. Kotler, Director, Technical Regulatory Affairs, Lockheed Martin, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 19-348, at 4 (filed Apr. 16, 2020).

domain awareness; and counter-fire target acquisition missions for use by both the Department of Defense and U.S. allies abroad.

III. CONCLUSION

Waiver of Sections 5.5 and 5.84, and 2.106 as necessary, of the Commission's rules is essential to permit the continued testing of Lockheed Martin's important radar technology. By continuing testing on a more limited basis, Lockheed Martin's systems can better serve the public interest by advancing U.S. national security here and abroad. Lockheed Martin's compliance with other Commission rules will ensure that a limited, expedited waiver of Sections 5.5 and 5.84 will not undermine the rule's purpose. Waiver is thus appropriate under the Commission's standards and precedents, and the Commission should grant the waiver as expeditiously as possible.

Respectfully submitted,

/s/ Jennifer A. Warren

Jennifer A. Warren
Vice President, Technology Policy & Regulation

Scott A. Kotler
Director, Technical Regulatory Affairs

LOCKHEED MARTIN CORPORATION
2121 Crystal Drive #100
Arlington, VA 22202

Mike Walsh
Chief Engineer, Radar and Sensor Systems (RSS) Rotary & Mission Systems

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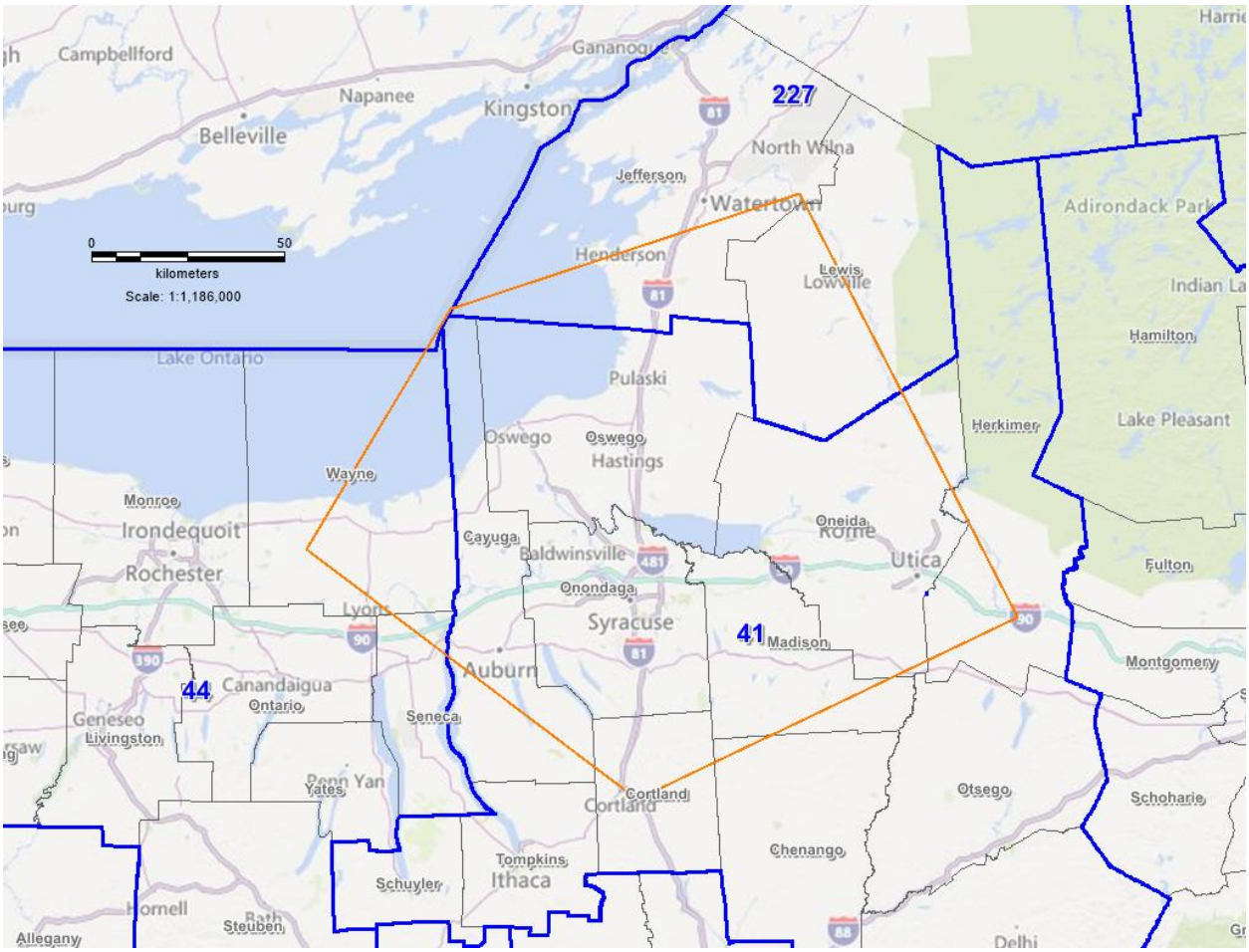
Exhibit A – Combined Contour and Contour Coordinates of Lockheed Martin's High Power S-Band Radar Sites in Cazenovia and Liverpool, New York



	Latitude	Longitude
1	42°35'04"N	76°07'55"W
2	43°10'06"N	77°11'25"W
3	43°43'21"N	76°43'42"W
4	43°59'20"N	75°36'44"W
5	43°00'36"N	74°55'04"W